

Florence County, South Carolina Early Action Plan for the 8-Hour Ozone Standard

Executive Summary

Florence County, South Carolina entered into an 8-Hour Ozone Early Action Compact with the South Carolina Department of Health and Environmental Control (SCDHEC) wherein the County committed to develop and implement programs aimed at reducing the formation of ground level ozone. The Florence County Economic Development Partnership is administering the Early Action Compact, which calls for the establishment of a Florence County Ozone Early Action Steering Committee. The Committee was established via appointments from County Council and the Partnership. Mr. Jay Smaldone, who is the Environmental Manager for Roche Carolina, Inc., currently chairs the Committee. The Committee has produced this plan in order to satisfy the requirements of the Early Action Compact. This plan contains the actions to be taken which include: a public and business awareness campaign as well as actions to influence behaviors aimed at reducing emissions of nitrous oxide and volatile organic compounds in Florence County.

Background

In 1997, the Environmental Protection Agency (EPA) revised the National Ambient Air Quality Standard (NAAQS) for Ozone from a one-hour standard to an 8-hour standard. This was done to reflect the latest understanding of the effects of ozone exposure and provide public health protection with adequate margin of safety. EPA will be designating areas as attainment (meeting the standard) or non-attainment (not meeting the standard) in April of 2004. This designation will be based on the most recent three years of monitoring data (i.e., 2001, 2002, 2003). The Department of Health and Environmental Control (DHEC) has an intensive monitoring network covering the state and routinely monitors for ozone during the months of April through October. This time period is often referred to as the "Ozone Season". If an area is designated as non-attainment, the Clean Air ACT (CA) requires states to revise their State Implementation Plan (SIP) outlining how the area will return to attainment within a certain time period. If EPA designates areas in South Carolina as non-attainment in April of 2004, a revision to the South Carolina SIP will be due no later than 2007. Additionally, once an area is designated as non-attainment, the CAA has specific requirements that must be implemented. These requirements affect industry, economic development, and transportation. One requirement, Non-attainment New Source Review sets out the level of emissions reductions required for new and modified industrial facilities. Another requirement of non-attainment areas is to coordinate local transportation and air quality planning to ensure that transportation plans, programs and projects are consistent with air quality goals. According to the CAA, transportation plans, programs, and projects cannot create new violations of the federal air quality standards; increase the frequency or severity of existing violations of the standard; or, delay attainment of standards.

The above approach is commonly referred to as the “traditional” approach. EPA has provided an option for areas that were meeting the one-hour standard to attain the 8-hour ozone standard by December 31, 2007, and obtain cleaner air sooner than currently federally mandated. This option offers a more expeditious time frame for achieving emissions reduction, while providing “fail-safe” provisions for the area to revert to the process (attainment or non-attainment) but will defer the effective date. A copy of the Florence County EAC public and business awareness and emission reduction strategies is included in Attachment I.

Forty-five counties in South Carolina elected to participate in the development of an Early Action State Implementation Plan (EAP). On December 18, 2002, Joe King, Florence County Administrator signed an Early Action Compact (EAC) for Florence County. Participants in the EAC include the county, DHEC and the EPA. All of these parties agree to work together to implement federal, state and local emissions control measures that will allow the non-attainment area to attain the 8-hour ozone standard earlier and therefore avoid implementing costly prescriptive measures. The EAC requires that all counties submit a local Early Action Plan to DHEC by March 31, 2004. This plan has been reviewed and approved by Florence County Council.

What is Ozone?

Ozone is a gas that occurs both in the Earth’s upper atmosphere and at ground level. Ozone is one of six criteria pollutants used by the EPA as an indicator of air quality. Depending on where ozone is found, it can be good or bad. Occurring naturally in the upper atmosphere, ozone acts as a shield from the sun’s harmful ultraviolet rays. However, ground-level ozone is a concern during the summer months when the weather conditions are favorable for producing ozone. Ozone is formed by chemical reactions between volatile organic compounds (VOCs) and oxides of nitrogen (NOx) in the presence of sunlight. Ozone is a major ingredient of smog.

Ozone Health Effects

Ozone can cause permanent damage to the respiratory system. Active children are at highest risk from ozone exposure because they often spend a large amount of time outdoors. Active adults of all ages who exercise or work outdoors have an increased risk of exposure to elevated levels of ozone. People with asthma or other respiratory diseases are particularly sensitive to ozone exposure. The following 2002 statistics are for Florence County and were collected by the Bureau of Epidemiology at DHEC:

- ~~✍~~ 5.4 per cent of the adults suffer annually from asthma;
- ~~✍~~ 384 hospitalizations were due to asthma (all ages).
- ~~✍~~ 110 asthma hospitalizations of children under the age of 18.
- ~~✍~~ 402 children under the age of 18 visited the Emergency Room due to asthma.

Sources of NOx and VOCs

NOx and VOCs are emitted from the following sources: stationary, area, mobile and natural. Stationary sources include larger permitted industry and power plants. Area sources include gas and non-transportation sources that collectively contribute to air pollution. Area sources include gas stations (emit NOx) and dry-cleaners (emit VOCs). Mobile sources are divided into two categories, on-road and off-road. The off-road mobile sources include trains, ships, boats, airplanes, lawn equipment, and construction equipment. On-road mobile sources include cars, trucks, and buses. Natural sources for VOCs are released from vegetation, mostly trees in South Carolina. Natural sources for NOx are very rare and include emissions from soil, lightning, and oceans. The following figures for Florence County show the percentage of sources by category for NOx (Figure 1) and VOCs (Figure 2). This data is updated periodically by SCDHEC.

Figure 1-NOx

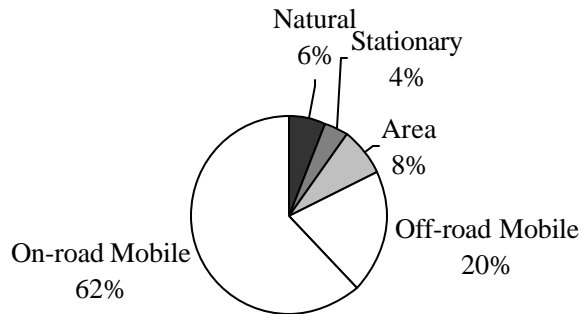
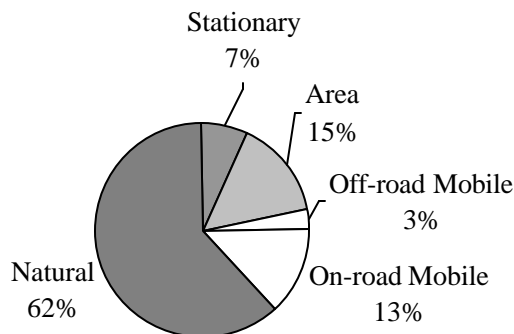


Figure 2-VOC



Emissions of NO_x and VOC's are precursors to the formation of ozone. South Carolina is sometimes referred to as "NO_x limited". This means that small amounts of NO_x enable ozone to form rapidly when VOC levels are relatively high, but ozone production is quickly limited by the removal of NO_x. Under these conditions, NO_x reductions are highly effective in reducing ozone while VOC reductions have little effect. Figure 1 shows that 62 percent of the NO_x emissions are from on-road mobile sources. With such a high percentage of NO_x coming from on-road sources, it would appear that reductions from mobile sources would be beneficial.

Demographics

Florence County is 800 square miles with a population of 125,761 according to the 2001-2002 South Carolina Statistical Abstract. The population density per square mile of land area is 157.2. There are a total of 1,366.98 miles of interstate, state primary and state secondary roads in the county. The number of registered vehicles in Florence County was 99,506, ranking the county 11th among South Carolina counties for number of registered vehicles.

Of the total population, 54,482 people over the age of 16 are employed. Of those employed, 52,847 people commute to work. The distribution of commute choices is identified on Table 1.

Table 1 Distribution of Commute Choices of Employed over the age of 16		
Drove Alone	43,968	80.6
Carpooled	7,573	13.9
Worked at home	872	1.6
Other	763	1.4
Walked	763	1.4
Public Transportation	543	1.0

Other includes motorcycles, bicycles and other means of transportation not identified.

Industry

Attachment II contains a list of the industry within Florence County and the most recent annual emission figures.

Public Involvement

Reference: Florence County Early Action Plan

Steering Committee

Meeting held to date regarding EAP:

- ?? July 8, 2003 – A meeting was held in which all COG counties participated including DHEC Central Office.
- ?? August 7, 2003, DHEC, Columbia – An Early Action Plan meeting was held. Representatives from Florence County attended.
- ?? Submitted December, 2003 progress report to SCDHEC for List of Emission Reduction Strategies – Florence County.

Emission Reduction Strategies

Through the development and implementation of this plan, Florence County will implement local emission reduction strategies that are economically feasible and that make sense for the county. In doing so, the efforts of Florence County should assist the state in achieving the 8-hour ozone standard by December 31, 2007, and maintaining the standard beyond 2012.

A number of federal control measures are in place and/or will be phased in over the next several years. These programs included the Tier II and Low Sulfur Gasoline and also the NOx SIP call. All of these programs have been developed to help area attain air quality standards.

The state is also proposing new and/or modifications to regulations that will assist non-attainment areas. The State programs could include Best Available Control Technology (BACT) regulations; modifications to the open burning regulations and a process to assure transportation plans, programs, and projects consider air quality goals.

Local measures must be implemented no later than April 2005. However Florence County will continue to address strategies that will assist in long-term maintenance of the 8-hour ozone standard. It is not possible to determine emissions reductions for each of the following strategies. However, directionally sound strategies have been selected and the county anticipates the cumulative impact of adopting each of these strategies will assist in maintaining the standard.

Challenges

Florence County will be faced with challenges regarding the implementation of emissions reduction strategies. Behavior modification will be one of the challenges faced. Florence County through the development of the Florence County Ozone Steering Committee and the efforts of the Ozone Action Coordinator, is currently educating area businesses and local citizens on the air quality standards and the implications of not meeting the standards. As education efforts are implemented, the county anticipates behavior modifications by local citizens. It will be through the joint efforts of local government, private citizens, business, and industry that Florence County will be able to assist the state in meeting and maintaining the 8-hour ozone standard.

Maintenance

Local measures must be implemented no later than April 2005. However, as previously mentioned, Florence County will continue to address strategies that will assist in long-term maintenance of the 8-hour ozone standard. DHEC will continue to provide the air quality monitoring necessary to determine attainment of the 8-hour ozone standard.

Yearly, at the end of each ozone season, Florence County will review and evaluate the effectiveness of the strategies adopted. If necessary, additional emission reduction strategies may be adopted. Florence County will continue to evaluate the effectiveness of these strategies and adjust where needed. Maintenance of the standard will depend upon the success of emission reduction strategies implemented by Florence County and surrounding counties as well as federal and state initiatives.

Attachment II

Florence County Point Source NO2 Emissions				
County	Plant Name	Permit Number	Pollutant	Point Source – NO2 (Tons Per Year)
Florence	APAC Carolina: #418 Florence	9900-0160	NO2	9.38
Florence	APAC Carolina: #422 Florence	9900-0217	NO2	4.32
Florence	Delta Mills: Pamplico/Cypress	1040-0011	NO2	3.50
Florence	Dupont: Teijin Films	1040-0015	NO2	216.65
Florence	ESAB Welding & Cutting Products	1040-0013	NO2	1.95
Florence	Ingram Lumber Company	1040-0016	NO2	4.04
Florence	Interstate Brands Corporation	1040-0089	NO2	2.66
Florence	Koppers, Incorporated: Florence	1040-0008	NO2	11.30
Florence	Marsh Lumber Company	1040-0010	NO2	7.16
Florence	Maytag: Florence Plant	1040-0067	NO2	4.63
Florence	McCall Farms	1040-0070	NO2	6.27
Florence	McLeod Medical Center	1040-0048	NO2	5.75
Florence	Palmetto Paving: Florence	9900-0337	NO2	3.49
Florence	Roche Carolina	1040-0076	NO2	3.30
Florence	Stone Container: Florence	1040-0003	NO2	2,935.78
Florence	Vulcraft Division of Nucor	1040-0029	NO2	1.29
Florence	Wellman Incorporated: Main Plant & Recycling	1040-0006	NO2	21.39
Florence	Young Pecan	1040-0026	NO2	0.16
1999 Florence Co Total				3,243.02
Emissions in Non-attainment Area-Total				246.88
Emissions in Non-attainment Area-Percent				8.2%

Attachment III

Florence County Point Source VOC Emissions				
County	Plant Name	Permit Number	Pollutant	Point Source – VOC (Tons Per Year)
Florence	APAC Carolina: #418 Florence		VOC	4.50
Florence	APAC Carolina: #422 Florence	9900-0217	VOC	0.71
Florence	Delta Mills: Pamplico/Cypress	1040-0011	VOC	5.80
Florence	Dupont: Teijin Films	1040-0015	VOC	43.50
Florence	ESAB Welding & Cutting Products	1040-0013	VOC	30.34
Florence	Interstate Brands Corporation	1040-0016	VOC	79.41
Florence	Koppers, Incorporated: Florence	1040-0008	VOC	44.40
Florence	Marsh Lumber Company	1040-0010	VOC	0.55
Florence	Maytag: Florence Plant	1040-0067	VOC	7.39
Florence	McCall Farms	1040-0070	VOC	0.03
Florence	McLeod Medical Center	1040-0048	VOC	2.37
Florence	Palmetto Paving: Florence	9900-0337	VOC	2.55
Florence	Roche Carolina	1040-0076	VOC	0.07
Florence	Socar	1040-0086	VOC	149.98
Florence	Steelfab	1040-0092	VOC	9.98
Florence	Stone Container: Florence	1040-0003	VOC	1,375.85
Florence	Vulcraft Division of Nucor	1040-0029	VOC	582.33
Florence	Wellman Incorporated: Main Plant & Recycling	1040-0006	VOC	41.18
Florence	Young Pecan	1040-0026	VOC	0.01
1999 Florence Co Total				2,380.95
Emissions in Non-attainment Area-Total				957.54
Emissions in Non-attainment Area-Percent				40.2%

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Early Ozone Action Steering Committee

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